

## REMARKS

Claims 1-5, 21-42 and 49-50 are pending, and claims 6-20 and 43-48 have been withdrawn with traverse under a restriction requirement. Claims 1-3, 21, 25-27, 37-38 and 49-50 have been amended. In light of the following, all of the pending claims are in condition for allowance. **If, after considering this response, the Examiner does not agree that all of the claims are allowable, then the Examiner is requested to schedule a teleconference with the Applicant's attorney to further prosecution of the application.**

### **Allowable Subject Matter**

Claims 27-36 and 38-42 are allowed.

Claim 1 has been amended to incorporate allowable subject matter common to each of allowed claims 27, 33 and 38: determining whether the phase of the servo signal is reversed based on the recovered servo data. Therefore, claim 1 is now in condition for allowance.

Claims 2-5 are patentable by virtue of their dependencies from claim 1.

**Rejection of claims 21-23 and 25-26 under 35 U.S.C. § 102(e) as being anticipated by Christiansen et al. (US 6,369,969)**

### **Claim 21**

Claim 21, as amended, recites an electromagnetic read head that is coupled to a Viterbi detector with a connection polarity, and a comparator operable to determine if the connection polarity is incorrect.

For example, referring, *e.g.*, to FIGS. 1 and 5-6 of the present application, an electromagnetic read head 14 is coupled to a Viterbi detector 100 with a connection polarity. The Viterbi detector 100 recovers a sync mark from the servo signal, and a comparator 104 determines if the connection polarity is incorrect by comparing the recovered sync mark to a reference sync mark. If the recovered sync mark matches the reference sync mark, then the comparator 104 determines that the connection polarity of the read head 14 is correct. If the recovered sync mark does not match the reference sync mark, then the comparator 104 determines that the connection polarity of the read head 14 is incorrect. It should be noted that it is the connection polarity of the read head itself (to the Viterbi detector) that is being determined. The connection polarity of the read head does not deviate or change over time; it is either correct or incorrect.

Christiansen, on the other hand, does not disclose an electromagnetic read head that is coupled to a Viterbi detector with a connection polarity, and a comparator operable to determine if the connection polarity is incorrect. Instead, Christiansen discloses a data detector 30 that receives a polarity signal 28 that is indicative of a polarity of the bias layer (not the connection of the read head) within the MR read element within the MR head 20 (FIG. 2; col. 3, lines 1-9). As the MR head 20 is used, the bias layer may eventually deviate from its preferred polarity due to the magnetic field induced by the write element or the magnetic field emanating from the disk (col. 1, lines 36-43). This deviation causes a reduction in the sensitivity of the MR head 20 (col. 1, lines 44-46). When the polarity of the bias layer has deviated from the preferred polarity, the polarity of the bias layer is modified by increasing the bias current applied to the bias layer (col. 3, lines 9-11 and col. 5, lines 25-35).

However, determining if the polarity of a bias layer has slowly deviated from a preferred polarity over time, as taught by Christiansen, is entirely different from determining if the read head itself is connected to a Viterbi detector correctly or incorrectly. Whether or not the bias layer of Christiansen experiences slight polarity shifts due to continued use of the read head simply has nothing to do with whether or not the read head itself is connected to the Viterbi detector incorrectly. In fact, after reviewing Christiansen in its entirety, the Applicant's attorney is unable to find any mention of an electromagnetic read head that is coupled to a Viterbi detector with a connection polarity, and a comparator operable to determine if the connection polarity is incorrect.

Therefore, Christiansen fails to disclose or suggest all of the features of claim 21. Accordingly, claim 21 is distinguishable over Christiansen.

#### **Claims 22-23 and 25-26**

Claims 22-23 and 25-26 are patentable by virtue of their dependencies from claim 21.

#### **Claim 37**

Claim 37, as amended, recites a servo signal having a phase that represents the connection polarity of the read head, and a Viterbi detector operable to recover the synchronization mark and other servo data from the samples of the servo signal regardless of the phase of the servo signal.

For example, referring, *e.g.*, to FIGS. 1 and 5-6 of the present application, an electromagnetic read head 14 is coupled to a Viterbi detector 100 with a connection polarity. The read head 14 generates a servo signal having a phase that represents the connection polarity of the read head. As disclosed in paragraph 33 of the present application, the Viterbi detector 100 recovers a sync mark from the servo signal regardless of the phase of the servo signal. This is possible because a phase-compensation circuit 64 adjusts the phase of the servo signal if the head connection polarity is reversed. It should be noted that the phase of the servo signal represents the connection polarity of the read head itself to the disk-drive system. The connection polarity of the read head does not deviate or change over time; the read head connection is either reversed or not reversed.

Christiansen, on the other hand, does not disclose a servo signal having a phase that represents the connection polarity of the read head, and a Viterbi detector operable to recover the synchronization mark and other servo data from the samples of the servo signal regardless of the phase of the servo signal. As discussed above in support of claim 21, Christiansen discloses a data detector 30 that receives a polarity signal 28 that is indicative of a polarity of the bias layer (not the connection of the read head) within the MR read element within the MR head 20 (FIG. 2; col. 3, lines 1-9). As the MR head 20 is used, the bias layer may eventually deviate from its preferred polarity due to the magnetic field induced by the write element or the magnetic field emanating from the disk (col. 1, lines 36-43). This deviation causes a reduction in the sensitivity of the MR head 20 (col. 1, lines 44-46). When the polarity of the bias layer has deviated from

the preferred polarity, the polarity of the bias layer is modified by increasing the bias current applied to the bias layer (col. 3, lines 9-11 and col. 5, lines 25-35).

However, determining if the polarity of a bias layer has slowly deviated from a preferred polarity over time, as taught by Christiansen, is entirely different from determining if the connection of the read head itself is reversed or not reversed. Christiansen simply has nothing to do with a phase of the servo signal representing the connection polarity of the read head, and recovering servo data from the samples of the servo signal regardless of the phase of the servo signal. In fact, after reviewing Christiansen in its entirety, the Applicant's attorney is unable to find any mention of a phase of a servo signal, let alone a phase of the servo signal representing the connection polarity of the read head.

Therefore, Christiansen fails to disclose or suggest all of the features of claim 37. Accordingly, claim 37 is distinguishable over Christiansen.

#### **Claim 49**

Claim 49, as amended, recites a servo signal having a phase that represents a connection polarity of the read head, and recovering servo data from the servo signal regardless of the phase of the servo signal.

As discussed above in support of claim 37, Christiansen fails to disclose or suggest a servo signal having a phase that represents a connection polarity of the read head, and recovering servo data from the servo signal regardless of the phase of the servo signal. Accordingly, claim 49 is distinguishable over Christiansen.

**Claim 50**

Claim 50, as amended, recites a servo signal having a phase that represents a connection polarity of the read head, and determining whether the phase of the servo signal is reversed or not reversed.

As discussed above in support of claim 37, Christiansen fails to disclose or suggest a servo signal having a phase that represents a connection polarity of the read head. In addition, claim 50 has been amended to incorporate allowable subject matter common to each of allowed claims 27, 33 and 38: determining whether the phase of the servo signal is reversed. Accordingly, claim 50 is distinguishable over Christiansen.

**Rejection of claim 24 under 35 U.S.C. § 103(a) as being unpatentable over**

**Christiansen in view of Reed et al. (US 6,052,248)**

Claim 24 is patentable by virtue of its dependency from claim 21.

## CONCLUSION

In light of the foregoing, claims 1-5, 21-42 and 49-50 are in condition for allowance, which is respectfully requested.

In the event any fees are due as a result of this Amendment, you are hereby authorized to charge such payment to Deposit Account No. 07-1897.

If, after considering this response, the Examiner does not agree that all of the claims are allowable, then he is requested to schedule a phone interview with the Applicant's attorney at (425) 455-5575.

Respectfully submitted,

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